VODML - generating utypes from vo-dml-xml
The example of CubeDM/DataSetMetadata

On going research
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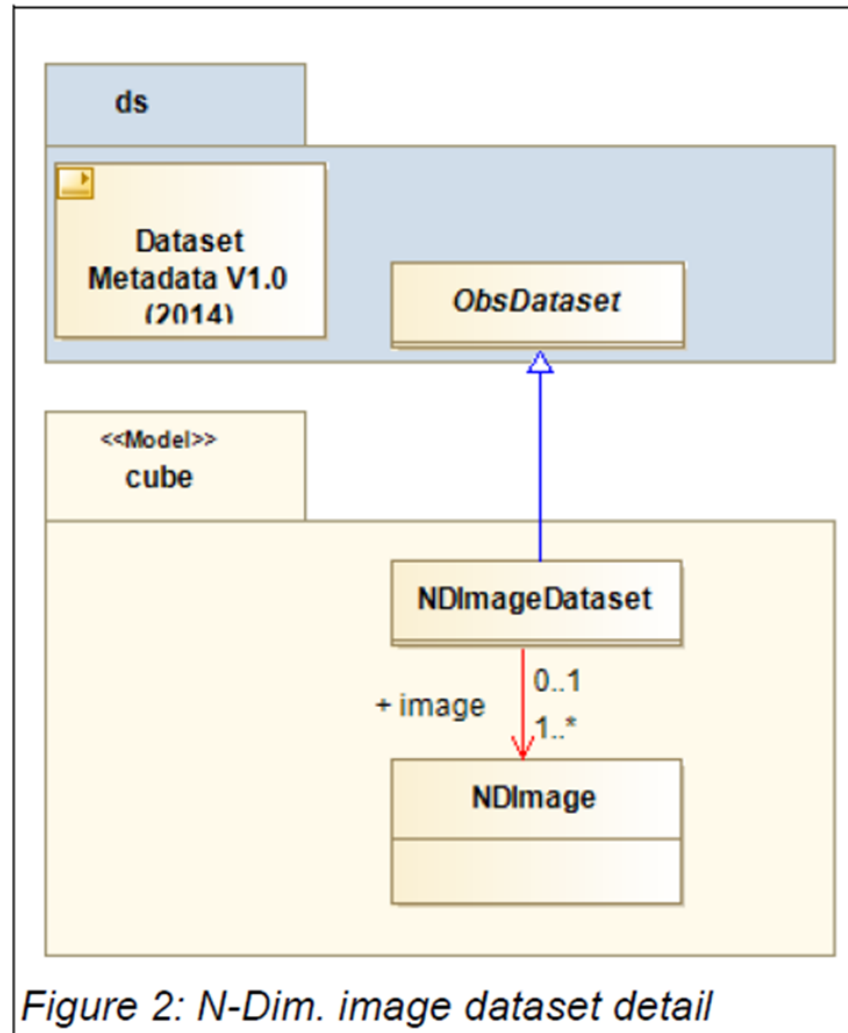(thank M.Louys and L.Michel for discussions)

Legacy utypes in VO-DML context

- « Legacy » utype : context of class use matters
  - « Who » is using the class/attribute
  - It is a « point of view » on the model structure for flat serialisation
- Doesn't allow to map the full DM structure on the data
  - Generally incomplete datasets (no DM information on lacking data
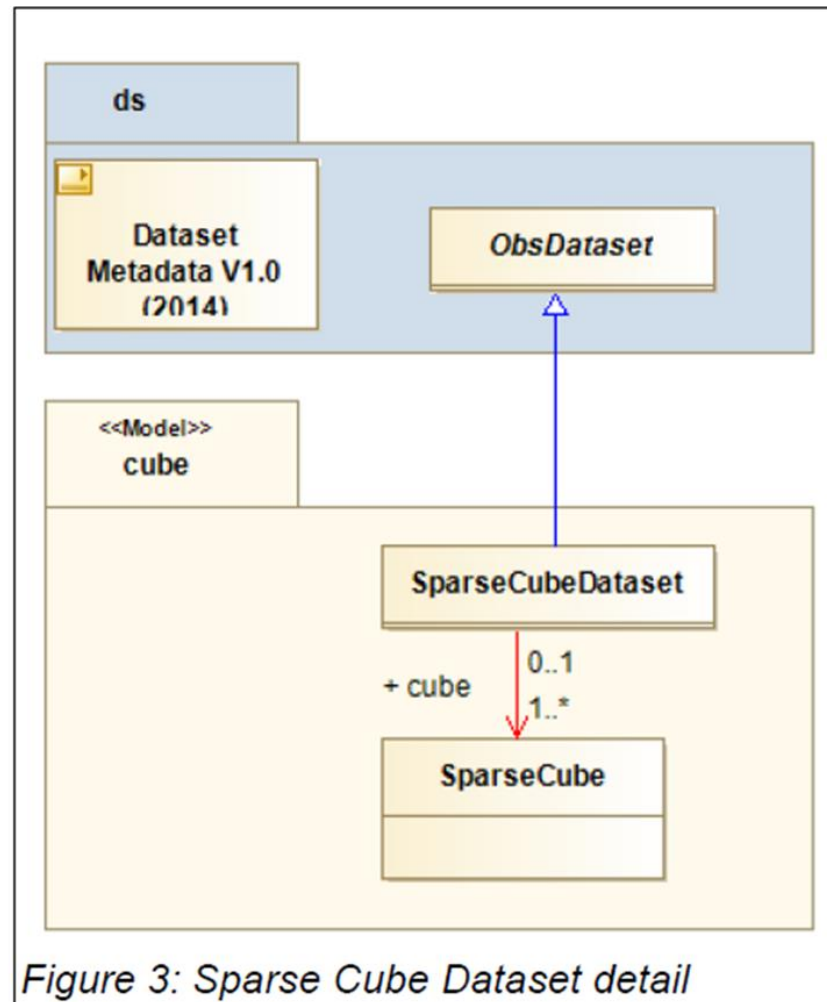 - Class limits difficult to find out

Legacy utypes in VO-DML context

- Anyway legacy utypes usefull for identifying « data role »
- How to define them properly in VO-DML context
  - Derive them from Vo-DML-xml description
- Example : legacy utype for PublisherDID of an NDImage
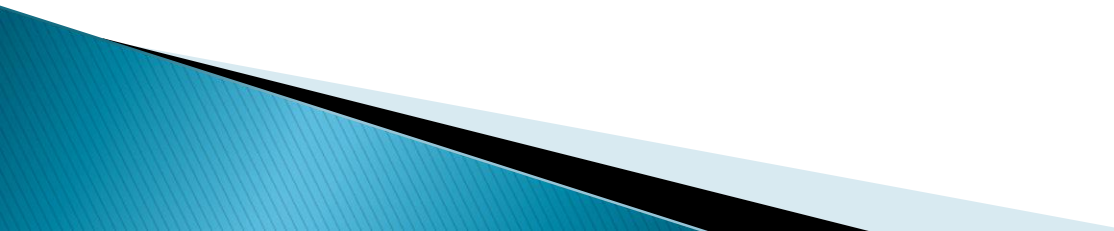- # from the PublisherdDID of a SparseCube

NdimageDataset extends ObsDataset

Figure 2: N-Dim. image dataset detail

SparseCubeDataset extends ObsDataset

Figure 3: Sparse Cube Dataset detail

ObsDataset extends the generic Dataset

Figure 6: Observation Dataset diagram

Example 1 : What we want to get

- NDImageDataSet extends ObsDataset which extends DataSet
- DataSet contains Curation which contains PublisherDID
- The Utype should be *NDImageDataSet.Curation.PublisherDID*
- It differs from SparseCubeDaty
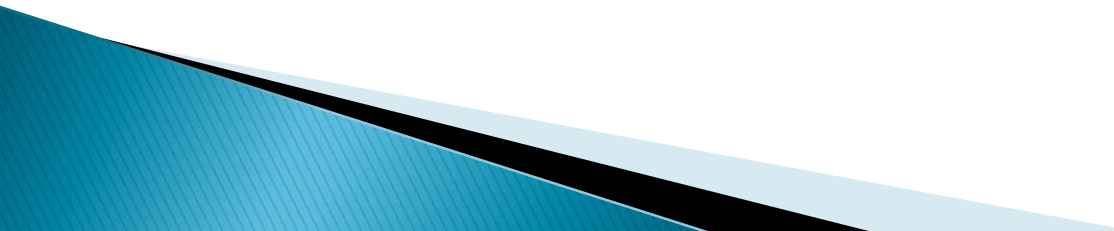- *SparseCubeDataset.Curation.PublisherDID*

Vo-dml-xml for NDimageDataset

<>name	<>description	<>attribute	<>extends	<>collection	<>reference
NDImageDataset	TODO : Missing description : please, update your UML model asap.		◢ **extends** <>**vodml-ref** NDcube:ds.ObsDataset		◢ **reference** <>**vodml-id** cube.NDImageDataset.image <>**name** image <>**description** TODO : Missing descriptio ▶ <>**datatype** ▶ <>**multiplicity**
NDImage	TODO : Missing description : please, update your UML model asap.		▶ **extends**	▶ **collection**	
CoordSys	TODO : Missing description : please, update your UML model asap.		▶ **extends**		
PixelCoordSys	TODO : Missing description : please, update your UML model asap.		▶ **extends**		
FrameMappings	TODO : Missing description : please, update your UML model asap.		▶ **extends**		
Voxel	TODO : Missing description : please, update your UML model asap.	▶ **attribute (2)**			
PixelatedData	TODO : Missing description : please, update your UML model asap.			▶ **collection**	
PointData	TODO : Missing description : please, update your UML model asap.	▶ **attribute**			
SparseCube	TODO : Missing description : please, update your UML model asap.		▶ **extends**	▶ **collection**	
NDPoint	TODO : Missing description : please, update your UML model asap.	▶ **attribute (5)**			
SparseCubeDataset	TODO : Missing description : please, update your UML model asap.		▶ **extends**		▶ **reference**
DataProduct	TODO : Missing description : please, update your UML model asap.			▶ **collection (2)**	

Vo-dml-xml for dataset.Curation

ct	<> vodml-id	<> name	<> description	<> extends	<> attribute
	dataset.Characterisation	Characterisation	TODO : Missing description : please, update your UML model asap.	▶ extends	
	dataset.Data	Data	TODO : Missing description : please, update your UML model asap.		
	dataset.ObsDataset	ObsDataset	TODO : Missing description : please, update your UML model asap.	▶ extends	▶ attribute
	dataset.Redshift	Redshift	TODO : Missing description : please, update your UML model asap.		▶ attribute (3)
	dataset.Curation	Curation	TODO : Missing description : please, update your UML model asap.		▲ attribute (7)

	<> vodml-id	<> name	<> description	<> d
<>	dataset.Curation.publisher	publisher	TODO : Missing description : please, update your UML model asap.	▶
<>	dataset.Curation.publisherID	publisherID	TODO : Missing description : please, update your UML model asap.	▶
<>	dataset.Curation.publisherDID	publisherDID	TODO : Missing description : please, update your UML model asap.	▶
<>	dataset.Curation.version	version	TODO : Missing description : please, update your UML model asap.	▶
<>	dataset.Curation.rights	rights	TODO : Missing description : please, update your UML model asap.	▶
<>	dataset.Curation.releaseDate	releaseDate	TODO : Missing description : please, update your UML model asap.	▶
<>	dataset.Curation.references	references	TODO : Missing description : please, update your UML model asap.	▶

ct	<> vodml-id	<> name	<> description	<> extends	<> attribute
	dataset.DataID	DataID	TODO : Missing description : please, update your UML model asap.		▶ attribute (11)
	dataset.Dataset	Dataset	TODO : Missing description : please, update your UML model asap.		▶ attribute (2)
	dataset.Derived	Derived	TODO : Missing description : please, update your UML model asap.		▶ attribute (2)
	dataset.Contact	Contact	TODO : Missing description : please, update your UML model asap.		▶ attribute (2)
	dataset.DataModel	DataModel	TODO : Missing description : please, update your UML model asap.		▶ attribute (3)
	dataset.CoordSys	CoordSys	TODO : Missing description : please, update your UML model asap.	▶ extends	

Rule 1

- Start from the name of the top class (NDImage)
- Look to children. Concatanate names
- Or look to Core class (the one the top class expands) and to its children.
- Concatanate names to the top Class name

Example 2

- Utype for Voxel components in an NDImage
- Should be :
  - NDImageDataSet.image.data.pixelAxes
  - NDImageDataset.image.data.dependentAxis

NDIImageDataset made of several Ndimages
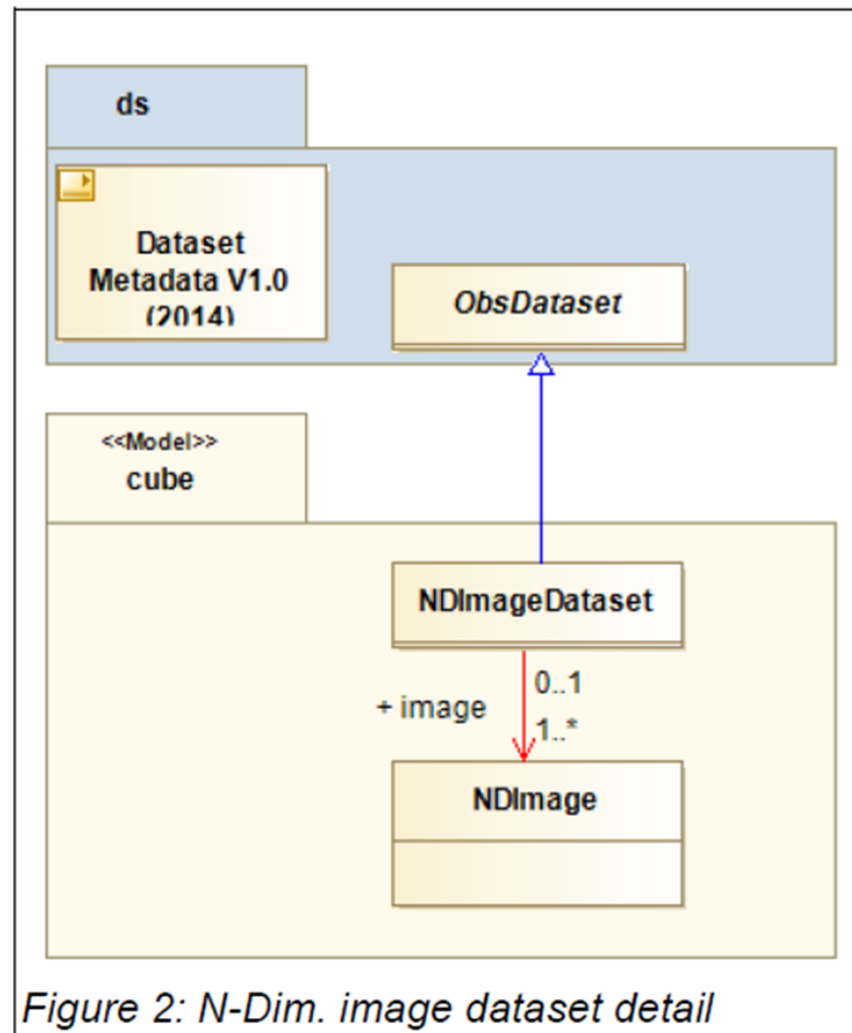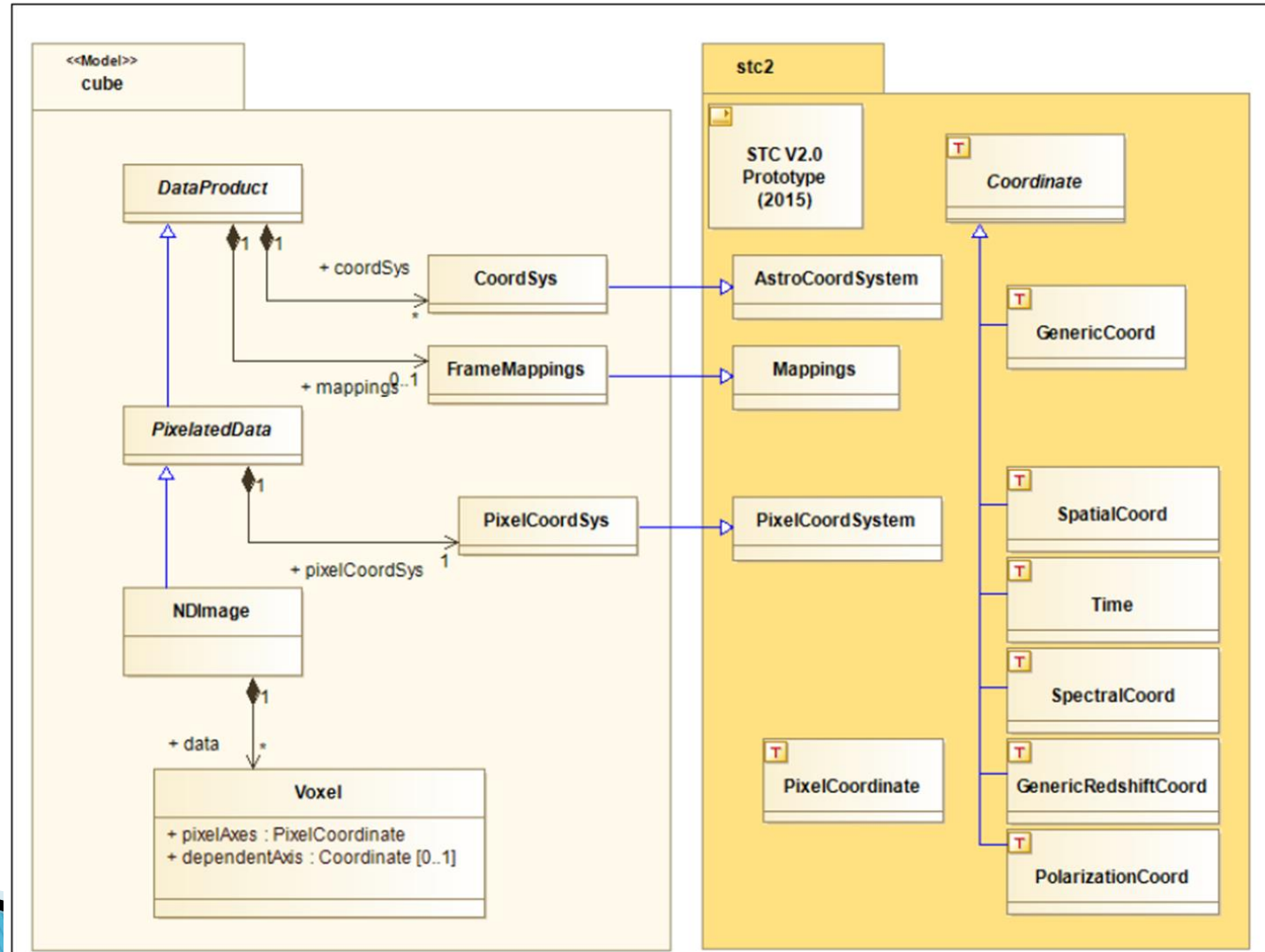

Figure 2: N-Dim. image dataset detail

Ndimage details

Vo-dml-xml for NDImageDataset

Vo-dml-xml for NDImage

<>vodml-id	<>name	<>description	<>attribute	<>extends	<>collection	<>
cube.NDImageDataset	NDImageDataset	TODO : Missing description : please, update your UML model asap.		▶ extends		▶
cube.NDImage	NDImage	TODO : Missing description : please, update your UML model asap.		▶ extends	◀ collection <>vodml-id cube.NDImage.data <>name data <>description TODO : Missing description : please, update your UML model asap. ◀ <>datatype <>vodml-ref NDcube:cube.Voxel ▶ <>multiplicity	
cube.CoordSys	CoordSys	TODO : Missing description : please, update your UML model asap.		▶ extends		
cube.PixelCoordSys	PixelCoordSys	TODO : Missing description : please, update your UML model asap.		▶ extends		
cube.FrameMappings	FrameMappings	TODO : Missing description : please, update your UML model asap.		▶ extends		
cube.Voxel	Voxel	TODO : Missing description : please, update your UML model asap.	▶ attribute (2)			
cube.PixelatedData	PixelatedData	TODO : Missing description : please, update your UML model asap.			▶ collection	
cube.PointData	PointData	TODO : Missing description : please, update your UML model asap.	▶ attribute			
cube.SparseCube	SparseCube	TODO : Missing description : please, update your UML model asap.		▶ extends	▶ collection	
cube.NDPoint	NDPoint	TODO : Missing description : please, update your UML model asap.	▶ attribute (5)			
cube.SparseCubeDataset	SparseCubeDataset	TODO : Missing description : please, update your UML model asap.		▶ extends		▶
cube.DataProduct	DataProduct	TODO : Missing description : please, update your UML model asap.			▶ collection (2)	

Rule 2

- When a class contains a reference or a collection
  - Concatanate the name of the reference to the utype
  - Go to the vo-dml-ref in « datataype » in the vo-dml-xml document
  - Look at the children there
  - Go on

Future work

- Check all the combinations of inclusion and relationship and define all the rules
- Complete a python script which build the utypes for
  - a piece of data (leave name) and
  - the top element we want.
- New utypes of char2 could be built this way from the vo-dml-xml description of the model